



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,622	06/05/2006	David Thomas Forrest	52993/326894	5397
23370	7590	08/05/2008	EXAMINER	
JOHN S. PRATT, ESQ KILPATRICK STOCKTON, LLP 1100 PEACHTREE STREET ATLANTA, GA 30309			FERGUSON, LAWRENCE D	
		ART UNIT		PAPER NUMBER
		1794		
		MAIL DATE	DELIVERY MODE	
		08/05/2008	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/581,622	FORREST ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	LAWRENCE D. FERGUSON	1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 23 June 2008.  
 2a) This action is **FINAL**.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-14 is/are pending in the application.  
 4a) Of the above claim(s) 15-30 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-14 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 05 June 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date 11/29/07;11/2/06.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Election***

1. This action is in response to the provisional election mailed June, 2008. (Group I) Claims 1-14 were elected rendering (Group II) Claims 15-30 withdrawn as a non-elected invention.

### ***RESPONSE TO REQUEST FOR RECONSIDERATION***

2. Applicant's election with traverse of method of making an optical recording medium (Group II) is acknowledged. The traversal is on the ground(s) that 'there is no undue burden on the Examiner to search claims to both Groups in this application' and 'if the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits, even though it includes claims distinct or independent inventions.' M.P.E.P. 803.

The search of the 2 classes and subclasses would entail the requisite serious burden as the search for method of making is not the same as the article search. Additionally, the steps used in the method claims would not be expected to appear in the class/subclass of the product claims. Every structure formed by chemical vapor deposition is not made using the same method steps.

The requirement is deemed proper and is therefore made **FINAL**.

***Objection of Abstract***

3. Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. The abstract of the disclosure is objected to because it is not a separate sheet. Correction is required. See MPEP 608.01(b).

***Oath or Declaration Defective***

4. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: It does not appear that David Forrest has signed and dated the declaration for patent application.

***Information Disclosure Statement***

5. The references disclosed within the information disclosure statements (IDS) submitted on November 2, 2006, and November 29, 2007, May 16, 2007, have been considered and initialed by the Examiner. There does not appear to be any references disclosed or information disclosure statement submitted on June 5, 2006,

***Claim Rejections – 35 USC 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the phrase, “grains substantially oriented in the planar direction” is indefinite. It is unclear whether the grains are oriented in the planar direction or not. The term “substantially” is not defined by the claim and the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. While, as a general proposition, broadening modifiers are standard tools in claim drafting in order to avoid reliance on the doctrine of equivalents in infringement actions, when the scope of the claim is unclear a rejection under 35 U.S.C. 112, second paragraph is proper. See *In re Wiggins*, 488 F. 2d 538, 541, 179 USPQ 421, 423 (CCPA 1973).

In claim 2, the phrase, “grains are oriented in a substantially radial direction around the circumference of the ring” is indefinite. It is unclear whether the grains are oriented in a radial direction or not. The term “substantially” is not defined by the claim and the specification does not provide a standard for ascertaining the requisite degree,

and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. While, as a general proposition, broadening modifiers are standard tools in claim drafting in order to avoid reliance on the doctrine of equivalents in infringement actions, when the scope of the claim is unclear a rejection under 35 U.S.C. 112, second paragraph is proper. See *In re Wiggins*, 488 F. 2d 538, 541, 179 USPQ 421, 423 (CCPA 1973).

In claim 8, the phrase, “circumference that has substantially symmetrical stresses around the circumference of the ring.” It is unclear whether the circumference has symmetrical stresses around the circumference of the ring. The term “substantially” is not defined by the claim and the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. While, as a general proposition, broadening modifiers are standard tools in claim drafting in order to avoid reliance on the doctrine of equivalents in infringement actions, when the scope of the claim is unclear a rejection under 35 U.S.C. 112, second paragraph is proper. See *In re Wiggins*, 488 F. 2d 538, 541, 179 USPQ 421, 423 (CCPA 1973).

In claim 11, it appears the phrase, “FCC Moissanite-3C silicon carbide” is a trademark/trade name. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982).

In claim 12, the phrase, "the peak ratio" lacks proper antecedent basis, as claim 1 does not disclose a peak ratio.

In claim 13, the phrases, "grain having their axes of growth substantially parallel to each other" and "having rotational orientation that is substantially random with respect to the axes of grain growth of the grains" are indefinite. It is unclear whether the axes of growth are parallel to each other or not and it is also unclear whether rotational orientation is random with respect to the axes of grain growth of the grains or not. The term "substantially" is not defined by the claim and the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. While, as a general proposition, broadening modifiers are standard tools in claim drafting in order to avoid reliance on the doctrine of equivalents in infringement actions, when the scope of the claim is unclear a rejection under 35 U.S.C. 112, second paragraph is proper. See *In re Wiggins*, 488 F. 2d 538, 541, 179 USPQ 421, 423 (CCPA 1973).

#### ***Claim Rejections – 35 USC § 103(a)***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-8 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goela et al. (U.S. 6,464,912) in view of Ioku et al (U.S. 4,582,561).

Goela discloses a silicon carbide ring structure formed by chemical vapor deposition (column 2, lines 24-26 and column 6, lines 20-23, 62-65). Figures 5-7 show the structure is a flat, planar article having a planar direction and normal direction, wherein the structure has a dimension in the planar direction that is larger than the dimension in the normal direction.

Goela does not explicitly disclose grains substantially oriented in the planar direction. Because Goela does not specifically teach grains oriented in the planar direction, one of ordinary skill in the art would look to the prior art, such as Ioku, to teach a silicon carbide structure formed by chemical vapor deposition with oriented grains, for use within the disclosed structure. Ioku teaches a silicon carbide layer formed by chemical vapor deposition, where the silicon carbide layer has grains which are oriented (column 3, line 67 through column 4, line 4). Goela and Ioku are combinable because they are related to a similar technical field, which is a silicon carbide structure formed by chemical vapor deposition. It would have been obvious to one of ordinary skill in the art to have substituted the silicon carbide grain oriented material of Ioku for the silicon carbide material of Goela because they are functional equivalents and Ioku teaches the conventionality of silicon carbide layers having grain orientation. Because the silicon carbide material is oriented, it is expected for the orientated silicon carbide grains to be oriented in the planar and radial directions of the flat structure, as the type of orientation has not been disclosed, as in claims 1-3.

Concerning claims 4-5, the ring structure has an inside and outside diameter, where the inside diameter is between 100mm to 600mm (3.94 inch to 23.62 inch) (column 6, lines 20-26). Although Goela does not explicitly disclose the distance between the inside diameter and outer diameter is one inch, because Goela discloses the silicon carbide material made by a chemical vapor deposition is deposited until a desired thickness is reached (column 2, lines 24-30) it is reasonable to conclude that a distance between the inner diameter and outer diameter of one inch can be determined by depositing the material, until the desired distance between the inside and outer diameters is met.

Concerning claim 6, the thickness of the structure can be less than 0.1mm (column 2, lines 30-33) and a diameter of the ring is 9.75 inches (column 6, lines 20-25).

Concerning claim 7, Figures 5-7 shows a flat ring with a curved outer surface.

Concerning claim 8, Figures 2-3 show a flat range have symmetrical stresses around the circumference of the ring.

Concerning claim 13, it is expected for the silicon carbide grains to be parallel to each other and to have a random rotational orientation, as Ioku teaches grains with a predetermined orientation.

Concerning claim 14, Ioku teaches a silicon carbide layer formed on a silicon substrate formed by chemical vapor deposition method (column 3, line 67 through column 4, line 1) where Ioku shows the conventionality of further comprising a layer of silicon on at least one surface of silicon carbide, where the silicon substrate can substitute for the substrate of Goela.

***Claim Rejections – 35 USC § 103(a)***

10. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goela et al. (U.S. 6,464,912) in view of Ioku et al (U.S. 4,582,561) further in view of Takeda et al (U.S. 6,515,297).

Goela and Ioku are relied upon for instant claim 1, as above. Neither Goela nor Ioku discloses a peak ratio of the structure. Takeda teaches a chemical vapor deposition silicon carbide structure having a peak intensity of 0.1 or more (column 2, lines 5-11), as in claims 11-12. All the references are combinable because they are related to a similar technical field, which is a silicon carbide structure formed by chemical vapor deposition. It would have been obvious to one of ordinary skill in the art to have substituted the silicon carbide material of Takeda for the silicon carbide material of Goela and Ioku as they are functional equivalents and Takeda teaches peak ratios of silicon carbide, similar to those in instant claims 11-12 are known within the art.

***Claim Rejections – 35 USC § 103(a)***

11. Claims 1-3, 6-7, 9-10 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goela et al. (U.S. 6,939,821) in view of Ioku et al (U.S. 4,582,561).

Goela '821 discloses a silicon carbide ring structure formed by chemical vapor deposition (column 5, lines 40-43, 53-54; column 6, lines 26-27; column 9, lines 19-21, 48-52 and Figure 2A). Figures 2A-2B shows the structure is a flat, planar article having a planar direction and normal direction, wherein the structure has a dimension in the planar direction that is larger than the dimension in the normal direction.

Goela '821 does not explicitly disclose grains substantially oriented in the planar direction. Because Goela '821 does not specifically teach grains oriented in the planar direction, one of ordinary skill in the art would look to the prior art, such as Ioku, to teach a silicon carbide structure formed by chemical vapor deposition with oriented grains, for use within the disclosed structure. Ioku teaches a silicon carbide layer formed by chemical vapor deposition, where the silicon carbide layer has grains which are oriented (column 3, line 67 through column 4, line 4). Goela '821 and Ioku are combinable because they are related to a similar technical field, which is a silicon carbide structure formed by chemical vapor deposition. It would have been obvious to one of ordinary skill in the art to have substituted the silicon carbide grain oriented material of Ioku for the silicon carbide material of Goela '821 because they are functional equivalents and Ioku teaches the conventionality of silicon carbide layers having grain orientation. Because the silicon carbide material is oriented, it is expected for the orientated silicon carbide grains to be oriented in the planar and radial directions of the flat structure, as the type of orientation has not been disclosed, as in claims 1-3.

Concerning claim 6, the thickness of the structure may range from 0.1mm to 1.0mm (column 10, lines 22-24) and a diameter of the ring is 4mm (column 12, lines 35-36).

Concerning claim 7, Figure 2A shows a flat ring with a curved outer surface.

Concerning claims 9-10, Goela '821 discloses the silicon carbide structure has a nitrogen content greater than  $3 \times 10^{19}$  atoms/cm<sup>3</sup> (column 5, lines 8-10, 40-48, 62-64 and column 6, lines 25-29) which appears to be sufficient enough to provide an opacity greater than 10,000 times that of CVD-deposited silicon carbide.

Concerning claim 13, it is expected for the silicon carbide grains to be parallel to each other and to have a random rotational orientation, as Ioku teaches grains with a predetermined orientation.

Concerning claim 14, Ioku teaches a silicon carbide layer formed on a silicon substrate formed by chemical vapor deposition method (column 3, line 67 through column 4, line 1) where Ioku shows the conventionality of further comprising a layer of silicon on at least one surface of silicon carbide, where the silicon substrate can substitute for the substrate of Goela '821.

***Claim Rejections – 35 USC § 103(a)***

12. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goela et al. (U.S. 6,939,821) in view of Ioku et al (U.S. 4,582,561) further in view of Takeda et al (U.S. 6,515,297).

Goela '821 and Ioku are relied upon for instant claim 1, as above. Neither Goela '821 nor Ioku discloses a peak ratio of the structure. Takeda teaches a chemical vapor deposition silicon carbide structure having a peak intensity of 0.1 or more (column 2, lines 5-11), as in claims 11-12. All the references are combinable because they are related to a similar technical field, which is a silicon carbide structure formed by chemical vapor deposition. It would have been obvious to one of ordinary skill in the art to have substituted the silicon carbide material of Takeda for the silicon carbide material of Goela '821 and Ioku as they are functional equivalents and Takeda teaches peak ratios of silicon carbide, similar to those in instant claims 11-12 are known within the art.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pickering (U.S. 6,872,637) teaches a silicon carbide ring produced by chemical vapor deposition (abstract and column 1, lines 12-20 and column 4, lines 30-37). Goela et al (U.S. 6,648,977) teaches chemical vapor deposition used to produce silicon carbide structures (column 2, lines 25-39).

***Conclusion***

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence Ferguson whose telephone number is 571-272-1522. The examiner can normally be reached on Monday through Friday 9:00 AM – 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks, can be reached on 571-272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/L. Ferguson/  
Patent Examiner  
AU 1794

/KEITH D. HENDRICKS/  
Supervisory Patent Examiner, Art Unit 1794